

STTH3012W



Pb Free Plating Product

30 Ampere, 1200 Volt Switch Mode Single Fast Recovery Epitaxial Diode

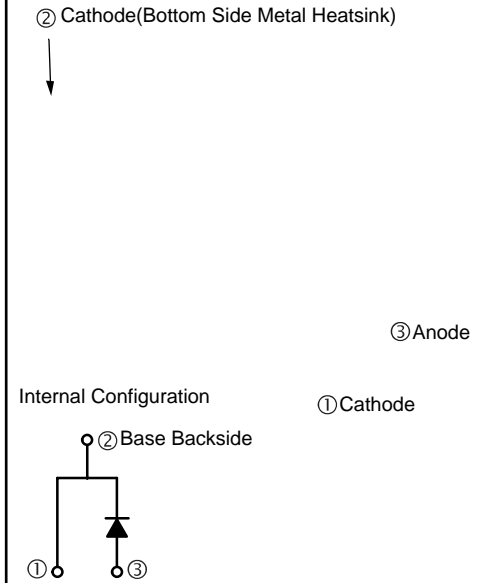
APPLICATION

- g Freewheeling, Snubber, Clamp
- g Inversion Welder
- g PFC
- g Plating Power Supply
- g Ultrasonic Cleaner and Welder
- g Converter & Chopper
- g UPS

PRODUCT FEATURE

- g Ultrafast Recovery Time
- g Soft Recovery Characteristics
- g Low Recovery Loss
- g Low Forward Voltage
- g High Surge Current Capability
- g Low Leakage Current

TO-247-2L



GENERAL DESCRIPTION

STTH3012W using the latest FRED FAB process (planar passivation pellet) with ultrafast and soft recovery characteristics.

ABSOLUTE MAXIMUM RATINGS

T<sub>C</sub>=25°C unless otherwise specified

Symbol	Parameter	Test Conditions	Values	Unit
V <sub>R</sub>	Maximum D.C. Reverse Voltage		1200	V
V <sub>RRM</sub>	Maximum Repetitive Reverse Voltage		1200	V
I <sub>F(AV)</sub>	Average Forward Current	T <sub>C</sub> =110°C	30	A
I <sub>F(RMS)</sub>	RMS Forward Current	T <sub>C</sub> =110°C	42	A
I <sub>FSM</sub>	Non-Repetitive Surge Forward Current	T <sub>J</sub> =45°C, t=10ms, 50Hz, Sine	300	A
P <sub>D</sub>	Power Dissipation		115	W
T <sub>J</sub>	Junction Temperature		-40 to +150	°C
T <sub>STG</sub>	Storage Temperature Range		-40 to +150	°C
Torque	Module-to-Sink	Recommended 3 Å	1.1	N·m
R <sub>θJC</sub>	Thermal Resistance	Junction-to-Case	1.1	°C/W
Weight			7.0	g

ELECTRICAL CHARACTERISTICS

T<sub>C</sub>=25°C unless otherwise specified

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I <sub>RM</sub>	Reverse Leakage Current	V <sub>R</sub> =1200V	--	--	100	µA
		V <sub>R</sub> =1200V, T <sub>J</sub> =125°C	--	--	1	mA
V <sub>F</sub>	Forward Voltage	I <sub>F</sub> =30A	--	2.15	2.5	V
		I <sub>F</sub> =30A, T <sub>J</sub> =125°C	--	1.75	--	V
t <sub>rr</sub>	Reverse Recovery Time	I <sub>F</sub> =1A, V <sub>R</sub> =30V, di <sub>F</sub> /dt=-2 \$ V	--	30	--	ns
t <sub>rr</sub>	Reverse Recovery Time	V <sub>R</sub> =600V, I <sub>F</sub> =30A	--	160	--	ns
I <sub>RRM</sub>	Max. Reverse Recovery Current	di <sub>F</sub> /dt=-2 \$ V <sub>J</sub> =25°C	--	5	--	A
t <sub>rr</sub>	Reverse Recovery Time	V <sub>R</sub> =600V, I <sub>F</sub> =30A	--	300	--	ns
I <sub>RRM</sub>	Max. Reverse Recovery Current	di <sub>F</sub> /dt=-2 \$ V <sub>J</sub> =725°C	--	11	--	A

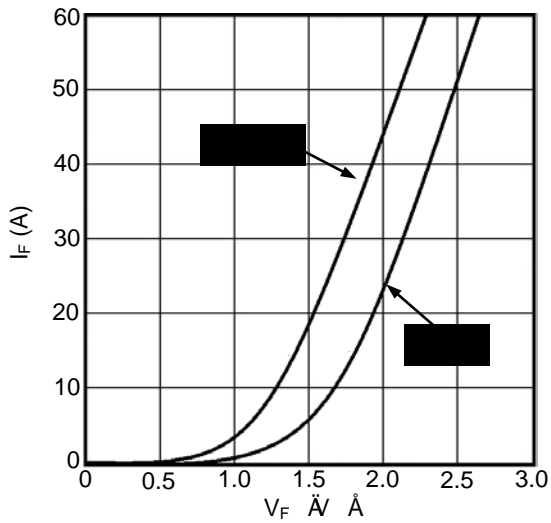


Fig1. Forward Voltage Drop vs Forward Current

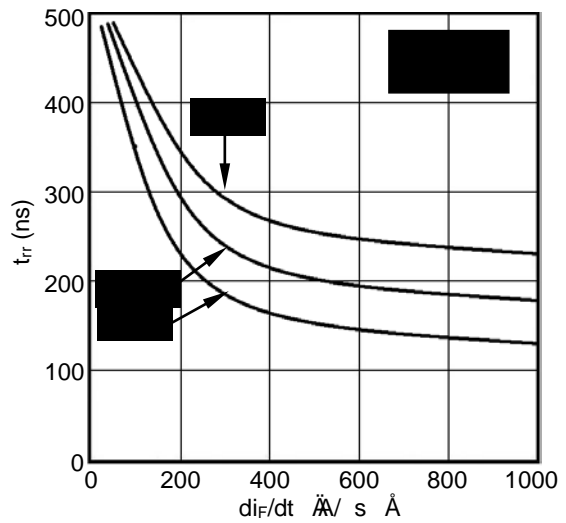


Fig2. Reverse Recovery Time vs  $di_F/dt$

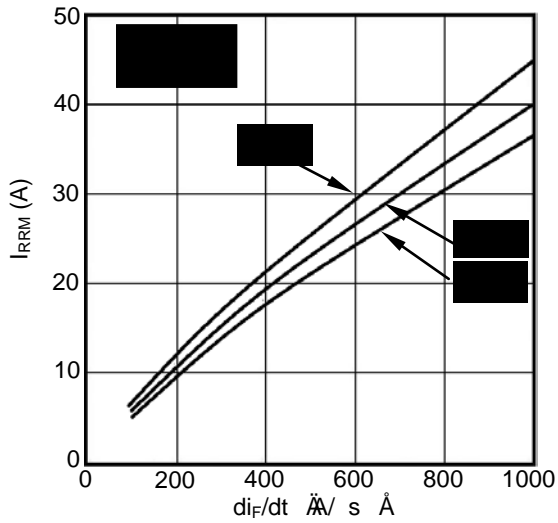


Fig3. Reverse Recovery Current vs  $di_F/dt$

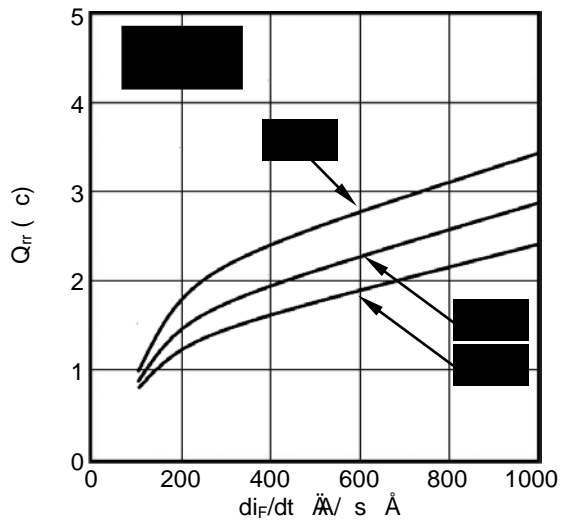


Fig4. Reverse Recovery Charge vs  $di_F/dt$

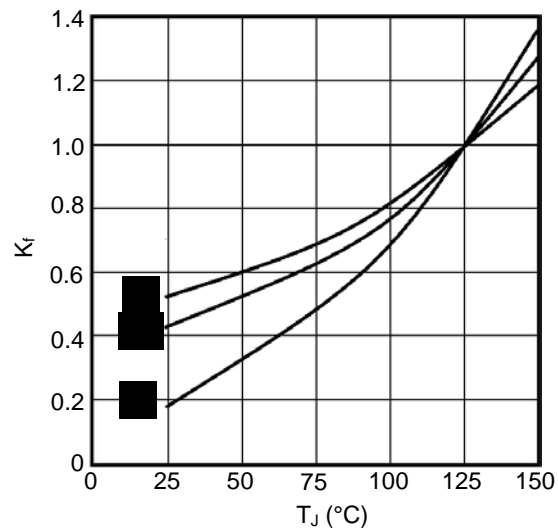


Fig5. Dynamic Parameters vs Junction Temperature

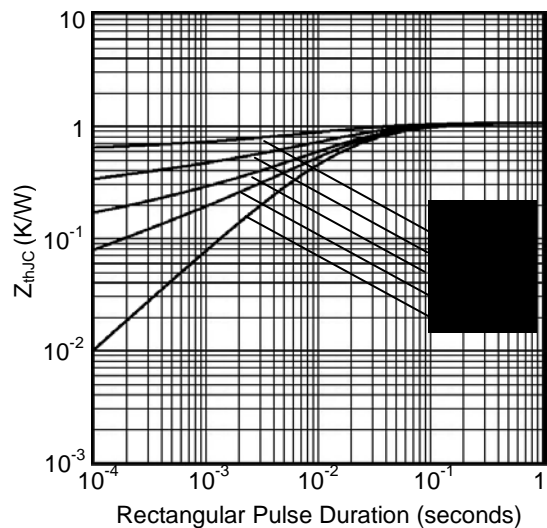


Fig6. Transient Thermal Impedance

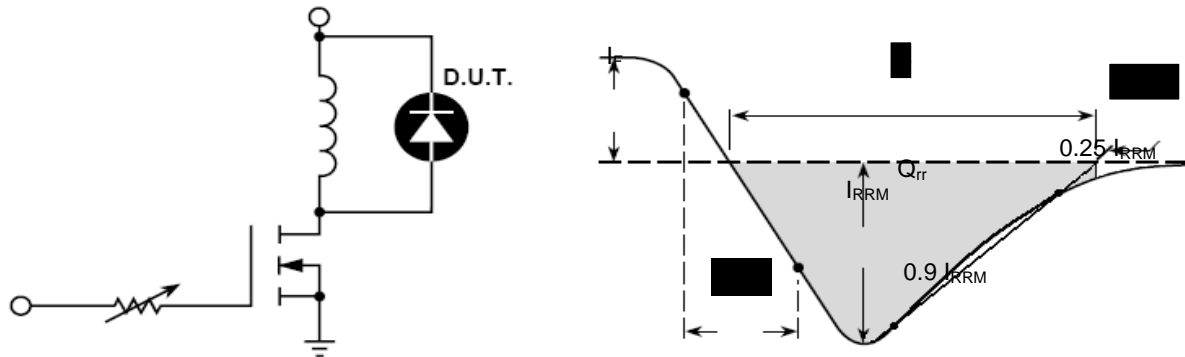
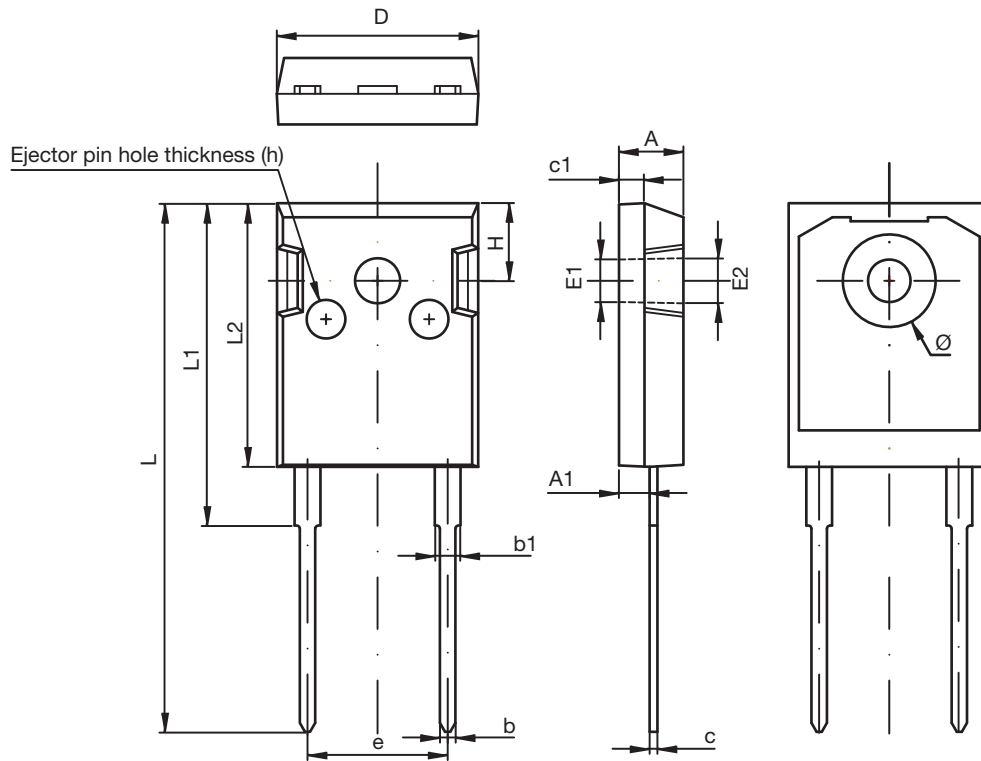


Fig7. Diode Reverse Recovery Test Circuit and Waveform



**TO-247-2L DIMENSIONS**

SYMBOL	DIMENSIONS IN MILLIMETERS		DIMENSIONS IN INCHES	
	MIN.	MAX.	MIN.	MAX.
A	4.850	5.150	0.191	0.200
A1	2.200	2.600	0.087	0.102
b	1.000	1.400	0.039	0.055
b1	1.800	2.200	0.071	0.087
c	0.500	0.700	0.020	0.028
c1	1.900	2.100	0.075	0.083
D	15.450	15.750	0.608	0.620
E1	3.500 Ref.		0.138 Ref.	
E2	3.600 Ref.		0.142 Ref.	
L	40.900	41.300	1.610	1.626
L1	24.800	25.100	0.976	0.988
L2	20.300	20.600	0.799	0.811
Ø	7.100	7.300	0.280	0.287
e	10.900 Typ.		0.429 Typ.	
H	5.980 Typ.		0.235 Typ.	
h	0.000	0.300	0.000	0.012